

Contents

INTRODUCTION	1-1
1. SKY LINE GENERAL DESCRIPTION	
1.1. Product Options	1-1
1.2. Nameplate Information	1-2
1.3. Technical data table	1-3
2. CAPACITY and PRESSURE CHARTS	
2.1. Using SKY Model Air-Conditioner Cooling and Heating Capacity Curves	2-1
2.2. Cooling and Heating Capacity Curves ANL-AVL100	2-2
2.3. Cooling and Heating Capacity Curves AVL-120	2-3
2.4. System Performance (Pressure) Charts ANL-AVL100	2-4
2.5. System Performance (Pressure) Charts AVL-120	2-5
3. REFRIGERATION CYCLE DIAGRAMS	
3.1. Refrigeration Cycle ANL-100	3-1
3.2. Refrigeration Cycle AVL-100	3-2
3.3. Refrigeration Cycle AVL-120	3-3
4. AIR FLOW CURVES	
4.1. Air flow Curves ANL-100	4-1
4.2. Air flow Curves AVL-100	4-2
4.3. Air flow Curves AVL-120	4-3
5. ELECTRICAL WIRING DIAGRAMS	
5.1. Electrical Wiring Diagram ANL-100	5-1
5.2. Electrical Wiring Diagram AVL-100/AVL-120.....	5-2

6. INSTALLATION INSTRUCTIONS

6.1. General	6-1
6.2. Standard Accessories	6-1
6.3. Electrical Requirements	6-1
6.4. Typical ANL System Installation	6-2
6.5. Installing the Outdoor Unit.....	6-3
6.6. Installing the Indoor Unit	6-4
6.7. Air Duct Installation.....	6-5
6.8. Connecting the Refrigerant Lines and Refrigerant Charge	6-6
6.9. Installing the Wall Mounted Unit and the Remote Control	6-8
6.10. Wiring the Indoor and Outdoor Units	6-8
6.11. Finishing the Job	6-10

7. TROUBLESHOOTING GUIDE

7.1. General Troubleshooting	7-1
7.2. Poor Cooling Troubleshooting	7-2
7.3. Poor Heating Troubleshooting	7-5
7.4. Indicator lamps troubleshooting	7-6

8. SPARE PARTS LIST

8.1. Indoor Unit Assembly	8-1
8.2. Electrical Control Box	8-3
8.3. Remote Controller	8-5
8.4. Outdoor Unit Assembly	8-7
8.5. Outdoor Terminal Box	8-9

INTRODUCTION

This Service Manual provides comprehensive technical documentation for SKY split air conditioners, models ANL-100, AVL-100 and AVL-120.

This information contained in the manual is useful for application engineers, architects, designers and various level service and installation personnel.

The manual also contains information about the optional features offered by the SKY series, as well as helpful information for service personnel on split air-conditioners, electrical wiring diagrams, refrigeration cycle diagrams and cooling & heating capacity curves for the various models.

The manufacturer reserves the right to change product specifications without prior notice.

1. GENERAL DESCRIPTION

1.1 Product Options

Line: SKY

Characteristics: Mini-Central

Category: 50Hz, 3 Phase Models

Model	Options	
	H	C
ANL-100	✓	✓
AVL-100	✓	✓
AVL-120	✓	✓

H - Heating and cooling by heat pump.

C - Cooling only (No a heat pump).

1.2 Nameplate Information

Technical information for a specific unit appears on the unit nameplate, which is attached to the indoor and/or the outdoor units.

See Figure 1-1: Typical Technical Data Nameplate.

The Nameplate includes the following information:

MODEL	Air-conditioner model name
CLIMATE CLASS	Type of climate for which the unit was designed, classified by: Class A – Standard. Class B – Desert conditions (<52°).
VOLT/PHASE/Hz	A/C power supply, for example: 380/3/50 = 380V/3 Phase/50 Hz.
COS φ	Power factor for the unit.
FUSE	Required fuse size, Amp.
CAPACITORS mF	All capacitor values according to the following sequence: Compressor capacitor, Outdoor Motor capacitor, Indoor Motor capacitor
REFRIGERANT R-22	Quantity of refrigerant charge, Gr.
COMPRESSOR	Type and catalog number of compressor.
CAPACITY BTU/H	Cooling and heating capacity in BTU/Hr. according to ISO 5151 standard.
CAPACITY W	Cooling and heating capacity in Watts according to ISO 5151 standard.
INPUT POWER	Power consumption in cooling and heating modes, watts.
AMPER	Current consumption in cooling and heating modes, Amp.
SERIAL NO.	Unit serial number. If blank – serial number is printed on Bar Code label.

MODEL ANL/AVL-100H	CLIMATE CLASS A7-A20, T1	CAPACITY BTU/H		COOLING	HEATING	SER NO
	VOLT/PH./HZ - 380V 3N ~ 50Hz	CAPACITY W		96700	97300	
	COS(φ) - 0.97	INPUT POWER W		28324	28500	
	FUSE - C32 IP20	AMPER A		10600	10000	
	CAPACITORS -			3X19.9	3X18	
	REFRIGERANT R22 9 - 7900					
	COMP. - MANEUROP MT-125					
	ADD 30 g GAS & 10 g OIL FOR					
	EACH METER OVER 8 METER					
	CAT - - 2002					



Fig. 1-1: Typical Technical Data Nameplate (Sample).

1.3 Technical data table

Model	50Hz	ANL-100	AVL-100	AVL-120
Cooling capacity	Btu/h	96700	96700	120300
	Kcal/h	24409	24409	30366
	Watt	28341	28341	35258
Heating capacity	Btu/h	97300	97300	121500
	Kcal/h	24560	24560	30669
	Watt	28517	28517	35610
Power Consumption cooling	Watt	10600	10600	13500
Power Consumption Heating	Watt	10000	10000	12900
Operating Current (cooling/Heating)	Amp	19.9	19.9	23.1
E.E.R-Energy Efficiency Ratio	Cool	9.1	9.1	8.9
C.O.P-Coefficient Of Performance	Heat	2.9	2.9	2.8
Moisture Removal	Lit/h	11.7	11.7	14.6
Power Supply	Volt/Hz/ph	380/415V, 50Hz, 3ph		
Refrigerant Lines -Drain	Φ - mm (in)	22.2 (5/8)		
Liquid/Gas Lines	Φ - inch	1/2 ; 7/8 (insulated)		
Maximum Piping Length	m (ft)	30 (98')		
Maximum Height Difference	m (ft)	15 (49')		
Time Delay Fuse	Amp.	3x32	3x32	3x40
Control Mode		I.R. Remote Control / Auto		
Temperature Control		Microcomputer		
A/C Options:		C / H (HDE option is under development)		
Indoor Unit	50Hz	ANL-100	AVL-100	AVL-120
Front Panel	Color	Metalic		
Air Filter		1 Removable/Washable Filter		
Air Direction Control		Air Ducts		
Dimensions (LxHxD)	mm (in)	1300x800x580	1500x700x480	1600x800x550
Air Flow (Turbo/High/Low)	m³/h	4760/3400/2890	5440/4420/2890	6800/5730/5100
	cfm	2800/2000/1700	3200/2600/1700	4000/3400/3000
Noise Level (Turbo/High/Low)	dba	37/33/30	36/32/30	38/34/31
Net Statis Pressure H ₂ O	mm (in)	20 (0.787)	10 (0.393)	17 (0.67)
Net Weight	Kg (Lb)	120 (264.3)	117 (257.7)	136 (299.5)
Indoor Fan Motor:	HP	0.75	0.5	0.75
Speed (Turbo/High/Low)	R.P.M	900/820/750	900/800/700	900/820/750
Full Load Amperage	Amp.	4.6	2x2.6	2x4.6
Motor Capacitor	µF/Volt	15	2x8	2x15
Blower Wheel	Type	Centrifugal		
Outdoor Unit	50Hz	ANL-100	AVL-100	AVL-120
Casing	Color	Metalic		
Dimensions (LxHxD)	mm	1700x830x1000	1700x830x1000	1700x830x1000
	in	66.93x32.67x39.37	66.93x32.67x39.37	66.93x32.67x39.37
Air flow (High/Low)	m³/h	16150/7990	16150/7990	16150/7990
	cfm	9500/4700	9500/4700	9500/4700
Noise Level (High/Low)	dba	75/63	75/63	75/63
Net Weight	Kg (Lb)	250 (550)	250 (550)	283 (623.3)
Fittings	Type	Flare		
Compressor Thermal Protector	Internal	MT125	MT125	MT160
		Overload		
Full Load Amperage	Amp.	3x17	3x17	3x22
Locked Rotor Amperage	Amp.	3x105	3x105	3x130
Capillary		Expansion valve		
R-22 Freon Gas	gr. (Oz.)	8000 (282.3)	8000 (282.3)	10000 (352.8)
Oil for Compressor	Type	160P Mineral		
Outdoor Fan Motor:	KW	2x0.66		
Motor Capacitor	µF/Volt			
Speed	R.P.M	900	900	900
Motor Full Load Amperage	Amp.	3x1.7		

2. CAPACITY and PRESSURE CHARTS

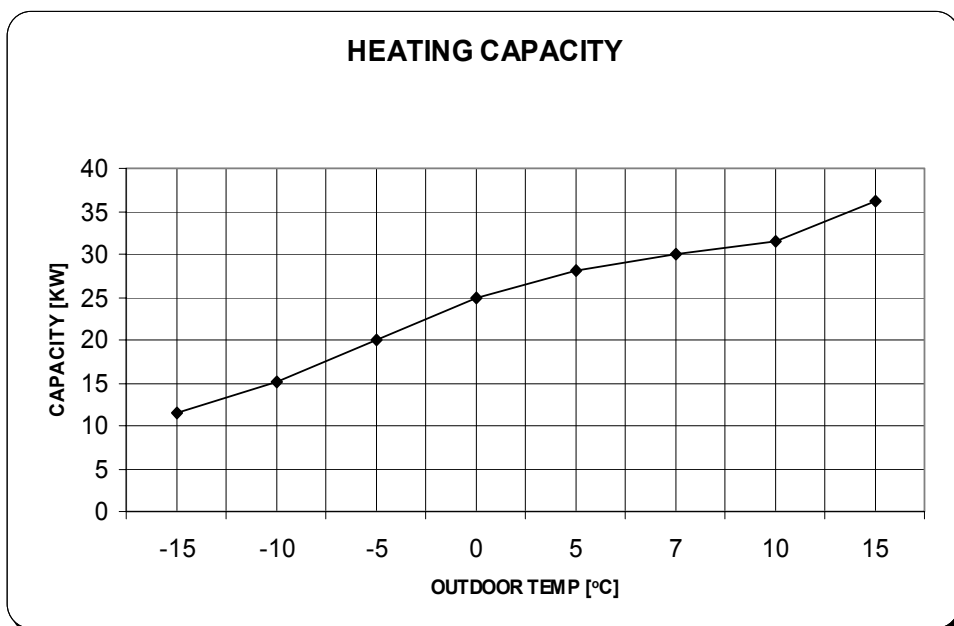
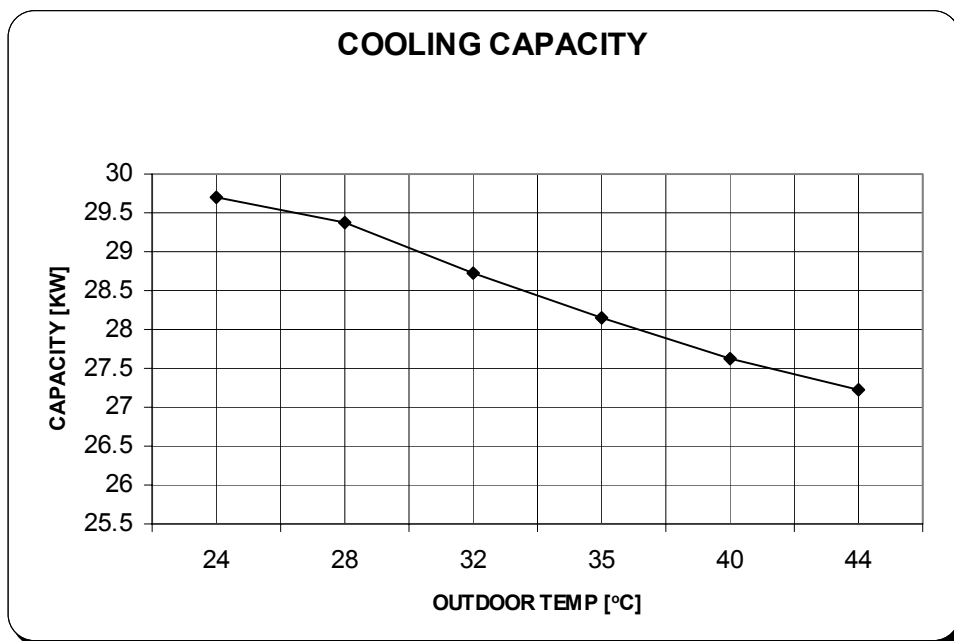
2.1 Using Cooling and Heating Capacity Curves

The Cooling and Heating Characteristics curves are mainly intended for use by air conditioning engineers as an aid in designing systems and in determining the capacity and number of units required at a given site.

The air conditioner capacities were determined in accordance with ISO 5151 standard operating conditions:

Design parameters for a given site are often different than the standard conditions. Therefore, the design engineer should use the capacity charts which follow to calculate the capacity of the air conditioners under the intended working conditions, in order to optimize the selection of air conditioner units for use at a particular site.

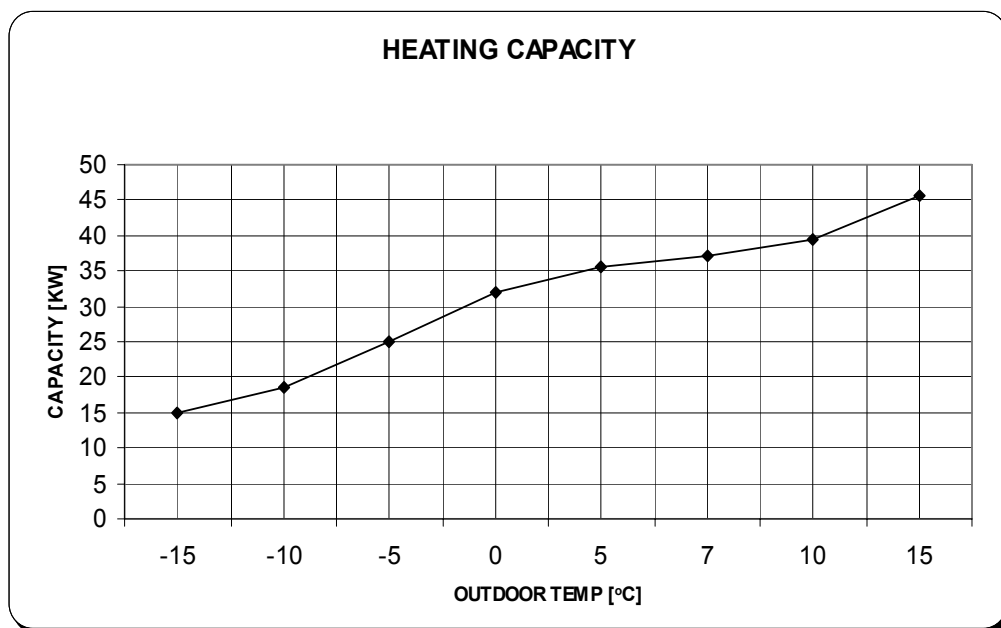
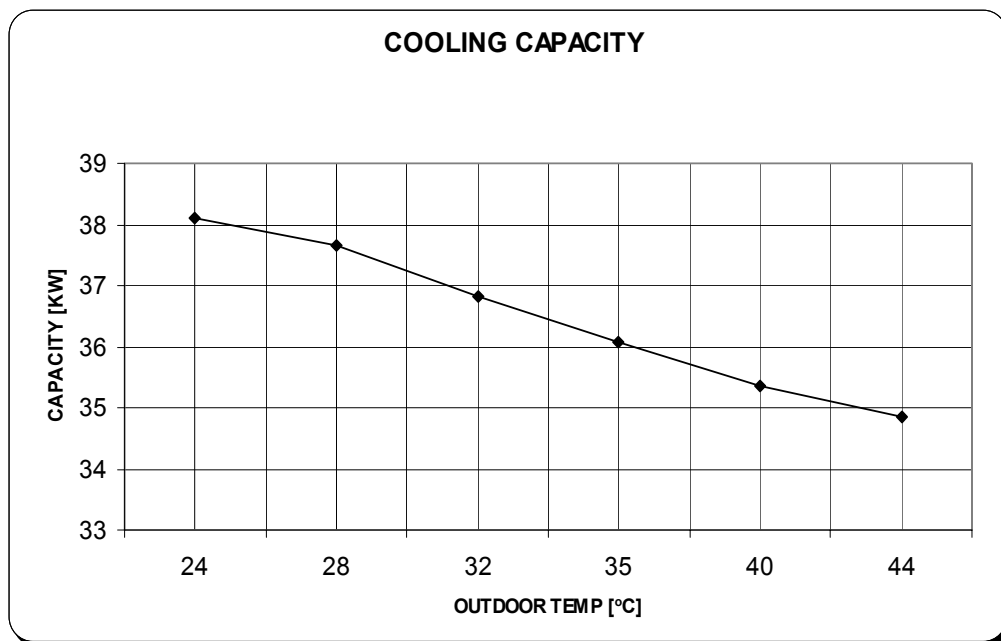
2.2 Cooling and Heating Capacity Curves ANL-AVL100



OUTDOOR R.H = 40%
 INDOOR R.H = 47%
 INDOOR TEMP = 27°C
 MAX.AIR SPEED: TURBO

OUTDOOR R.H. = 77%
 INDOOR TEMP = 20 °C
 AIR SPEED: TURBO

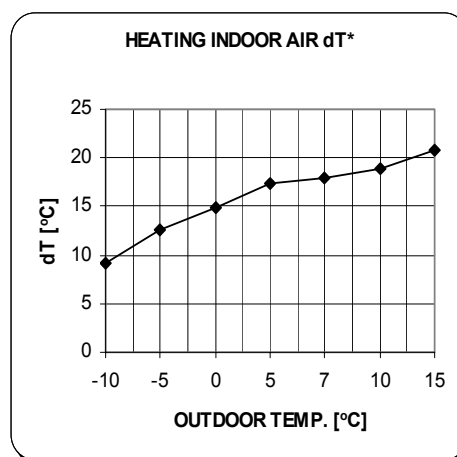
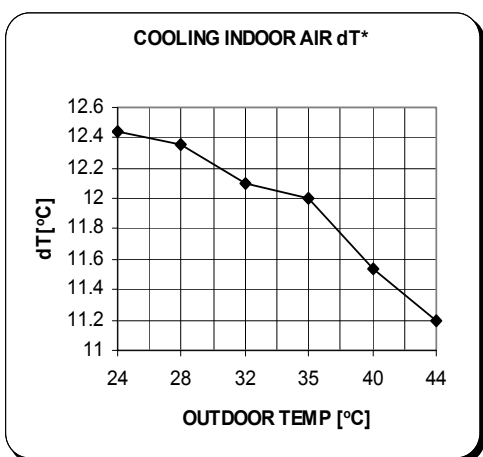
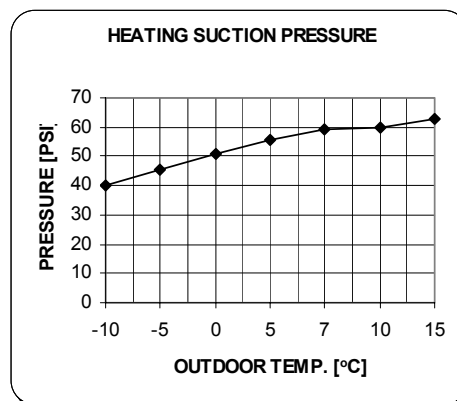
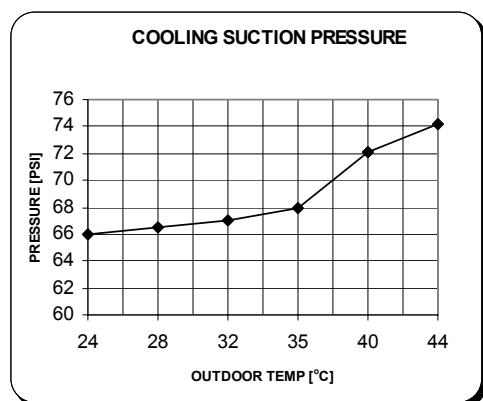
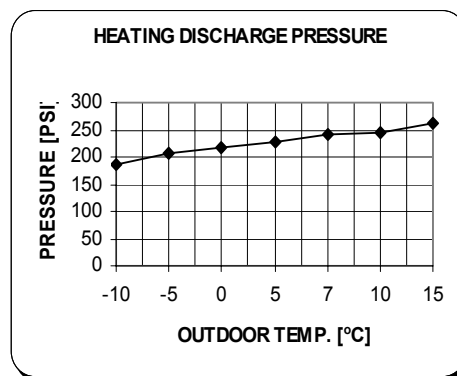
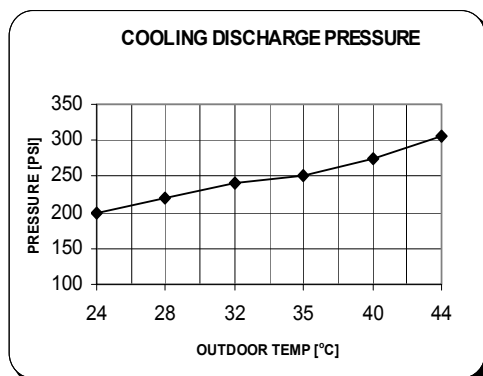
2.3 Cooling and Heating Capacity Curves AVL-120



OUTDOOR R.H. = 40%
INDOOR R.H. = 47%
INDOOR TEMP = 27°C
MAX.AIR SPEED: TURBO

OUTDOOR R.H. = 77%
INDOOR TEMP = 20 °C
AIR SPEED: TURBO

2.4 System Performance (Pressure) Charts ANL-AVL100

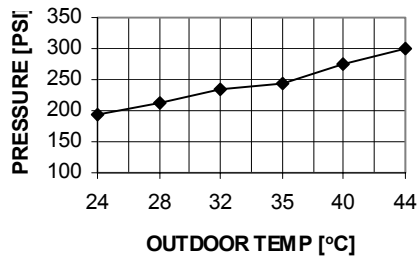


OUTDOOR R.H = 40%
 INDOOR R.H = 47%
 INDOOR TEMP = 27°C
 MAX.AIR SPEED: TURBO

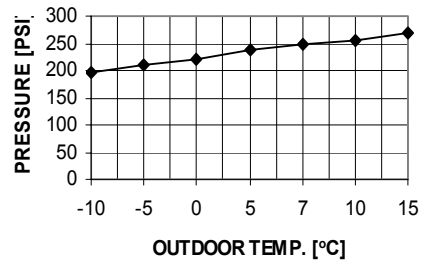
OUTDOOR R.H. = 77%
 INDOOR TEMP = 20 °C
 AIR SPEED: TURBO

2.5 System Performance (Pressure) Charts AVL-120

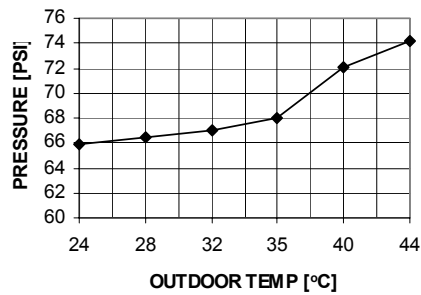
COOLING DISCHARGE PRESSURE



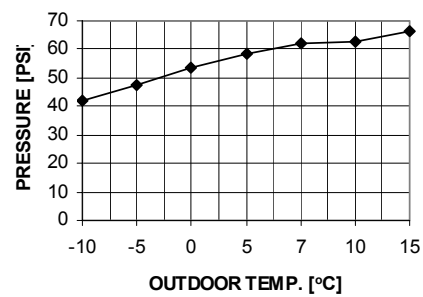
HEATING DISCHARGE PRESSURE



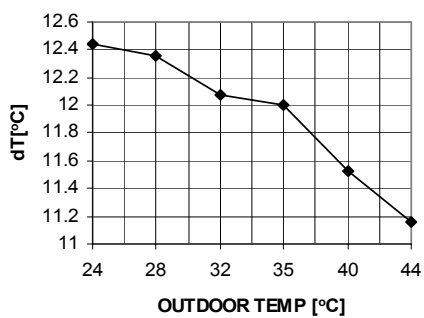
COOLING SUCTION PRESSURE



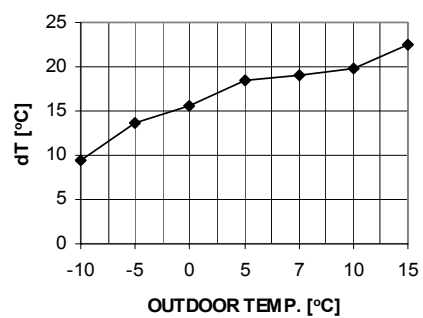
HEATING SUCTION PRESSURE



COOLING INDOOR AIR dT^*



HEATING INDOOR AIR dT^*

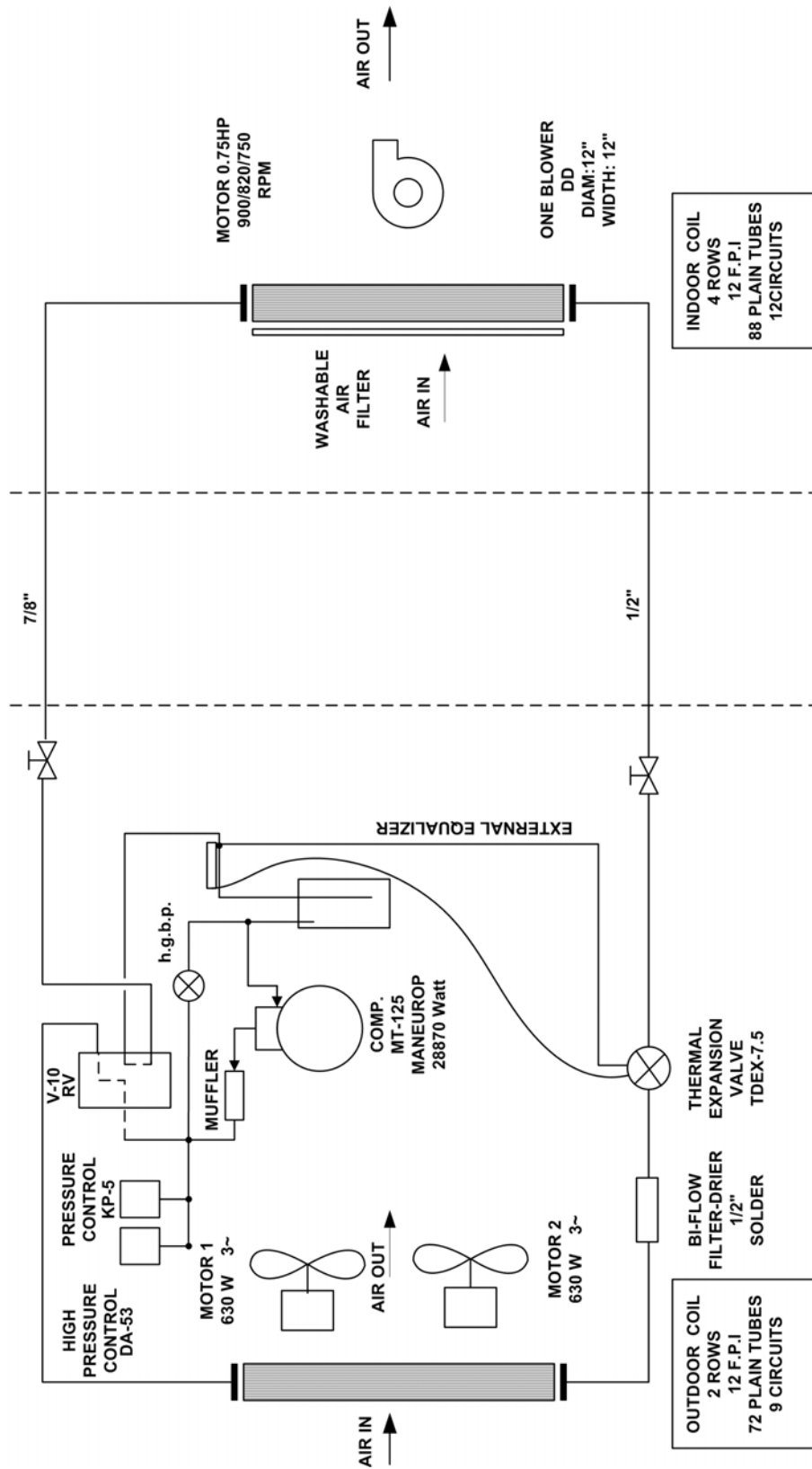


OUTDOOR R.H. = 40%
INDOOR R.H. = 47%
INDOOR TEMP = 27°C
MAX.AIR SPEED: TURBO

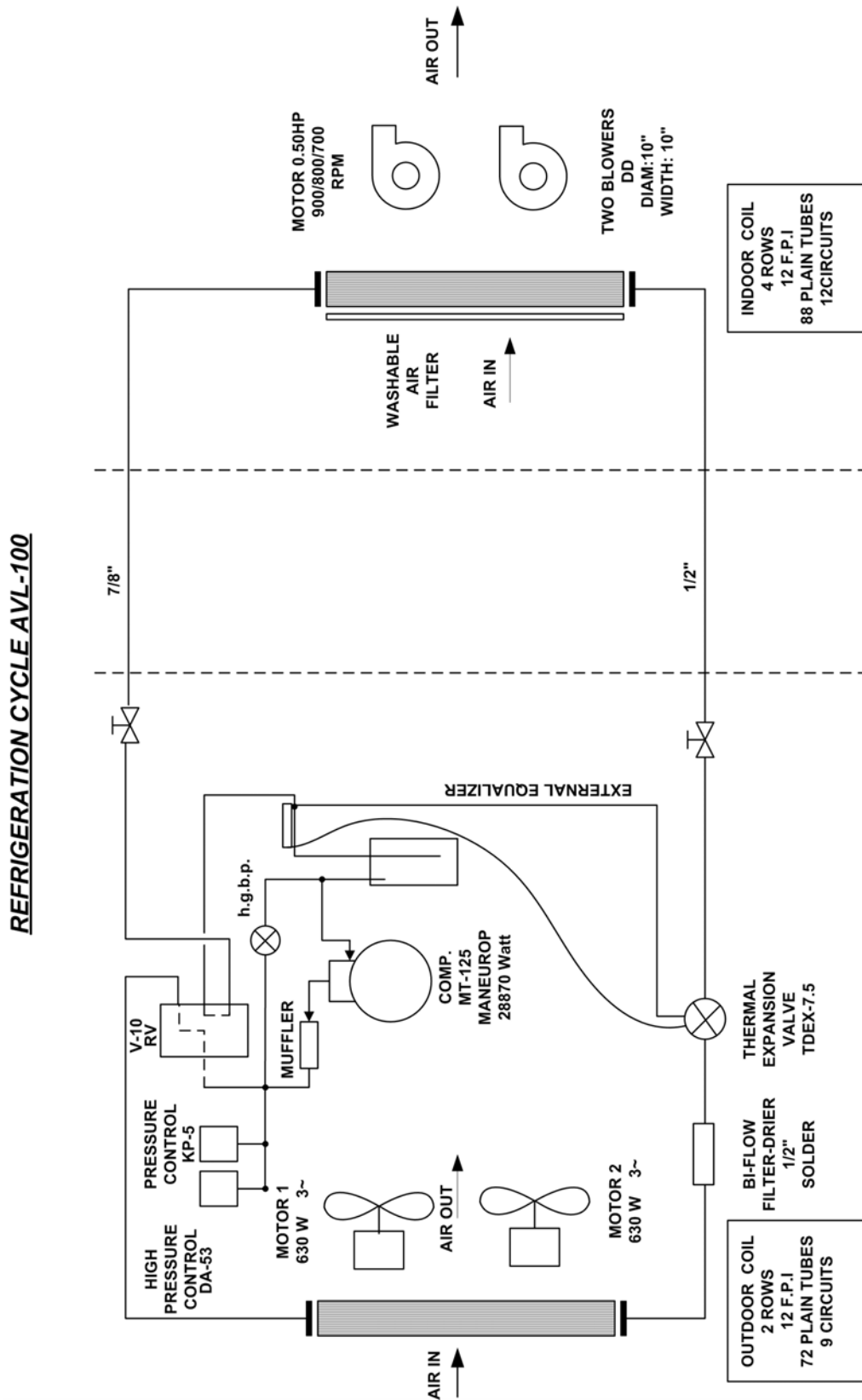
OUTDOOR R.H. = 77%
INDOOR TEMP = 20 °C
AIR SPEED: TURBO

3.1 Refrigeration Cycle ANL-100

REFRIGERATION CYCLE ANL-100

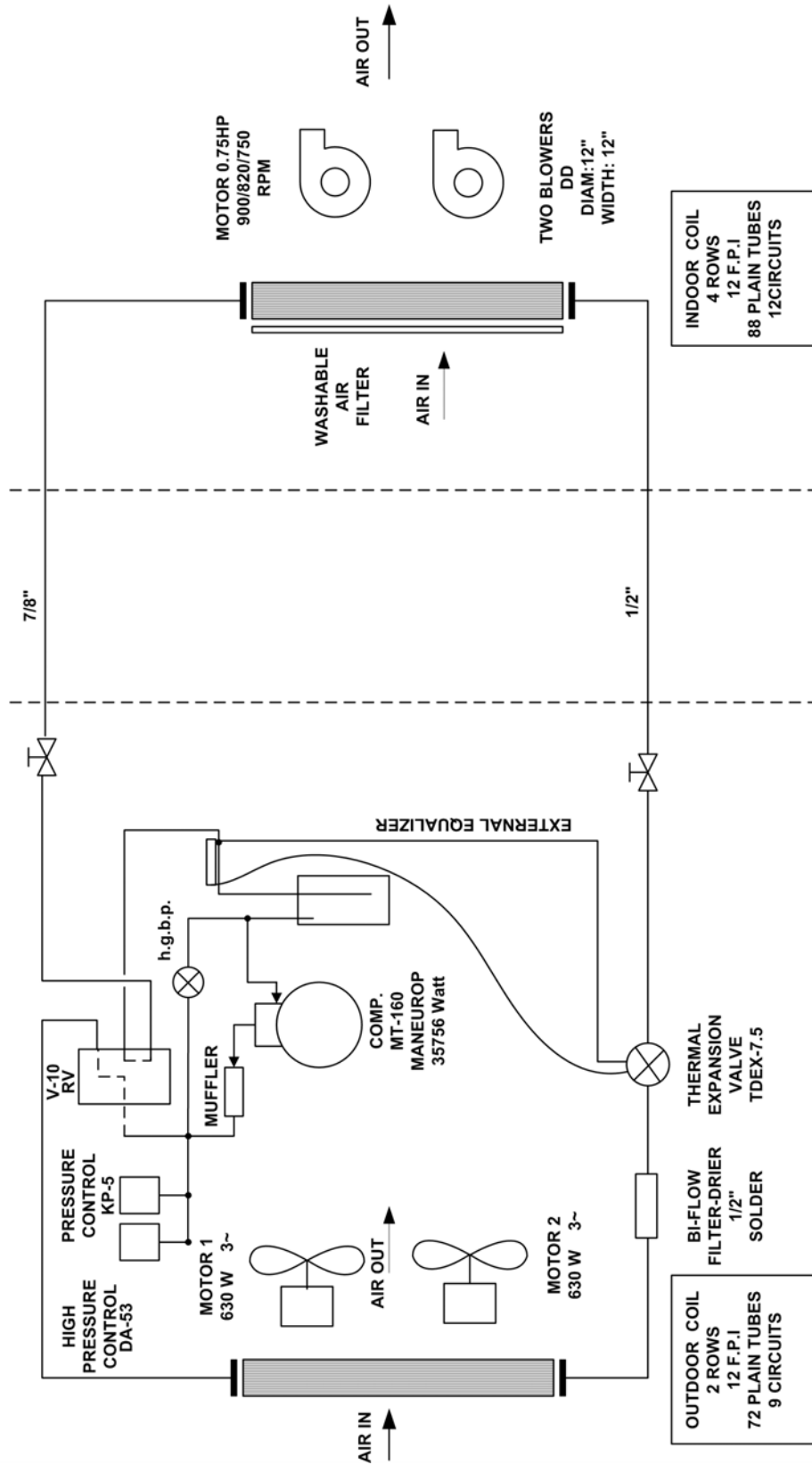


3.2 Refrigeration Cycle AVL-100

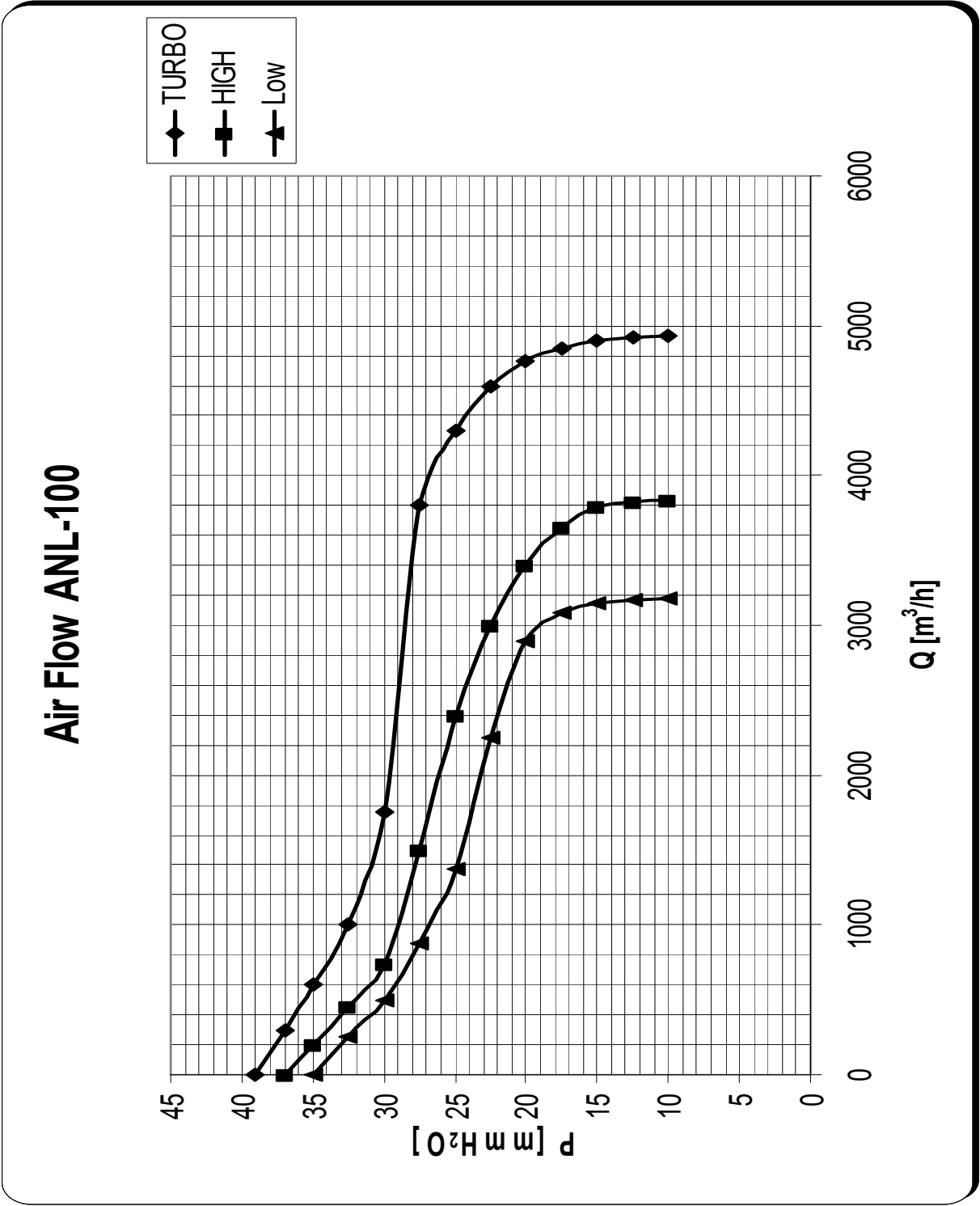


3.3 Refrigeration Cycle AVL-120

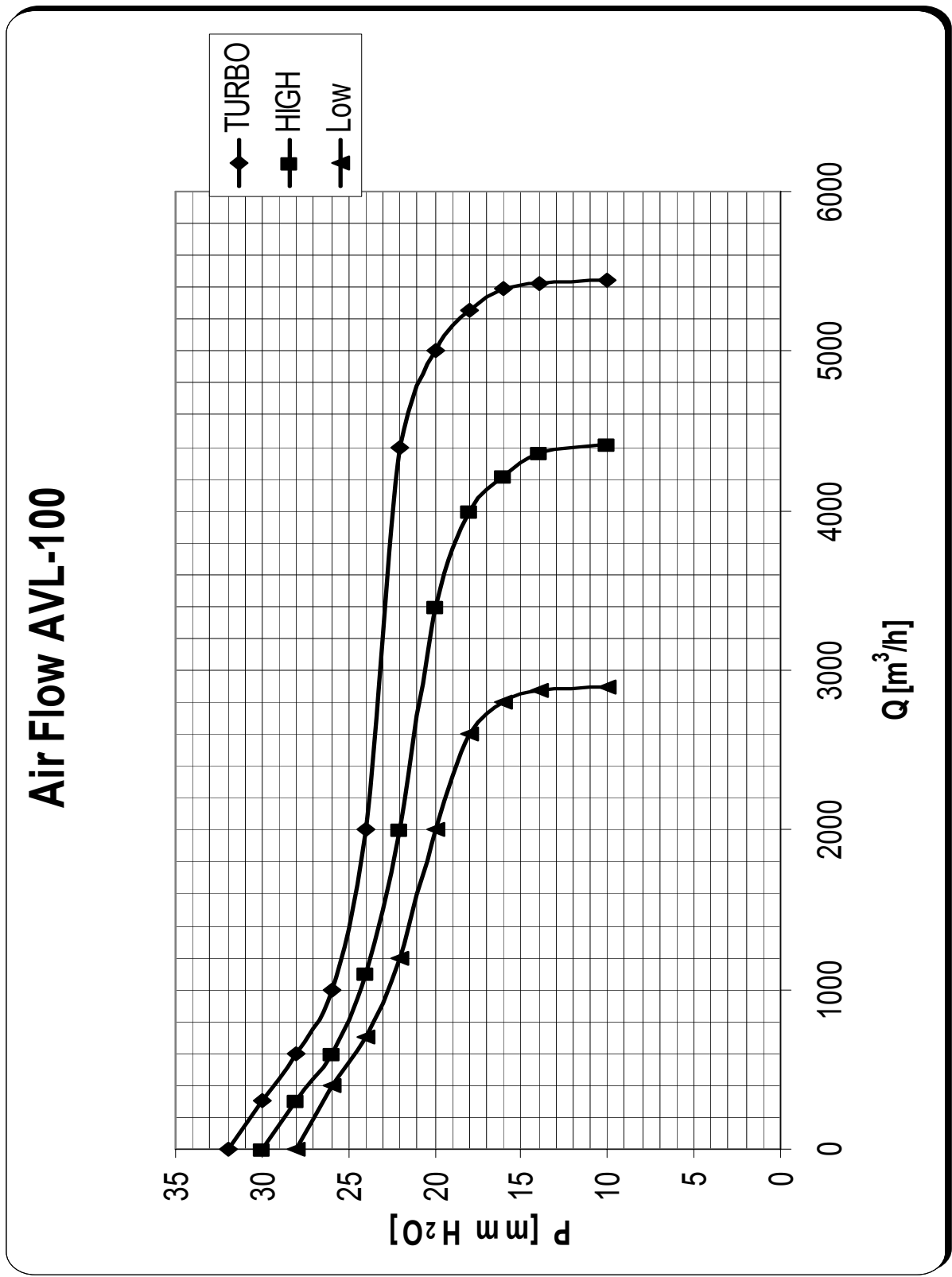
REFRIGERATION CYCLE AVL-120



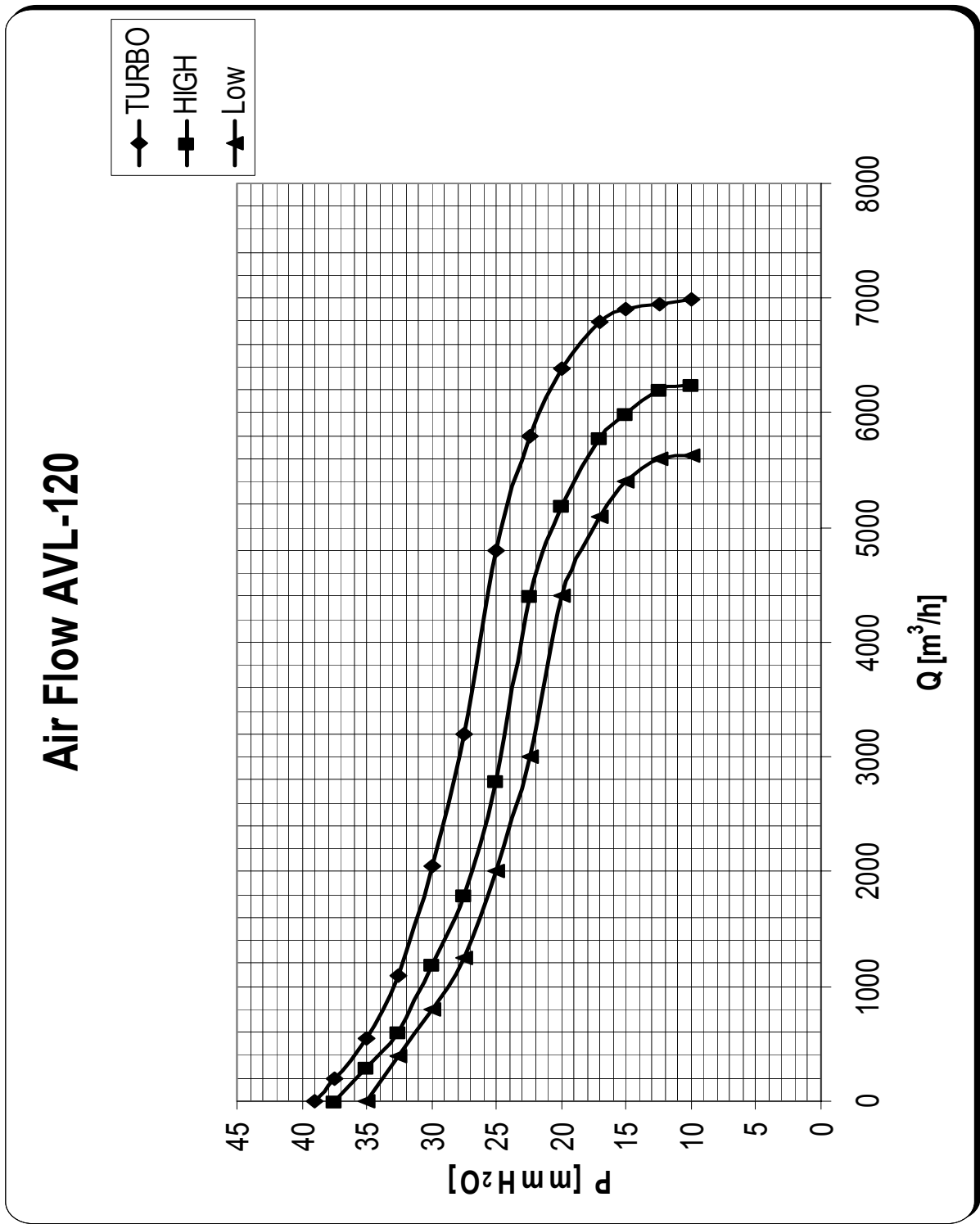
4.1 Air flow Curves ANL-100



4.2 Air flow Curves AVL-100

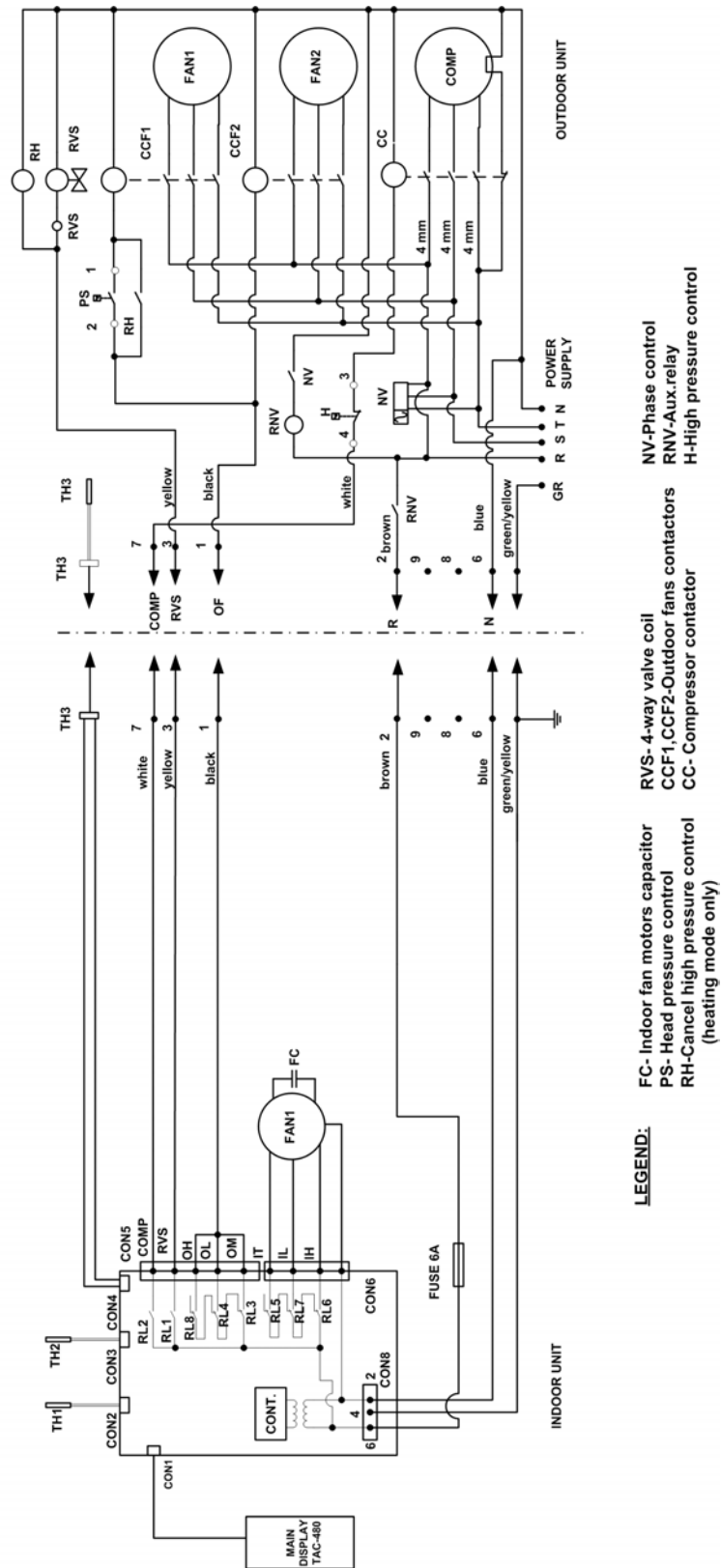


4.3 Air flow Curves AVL-120



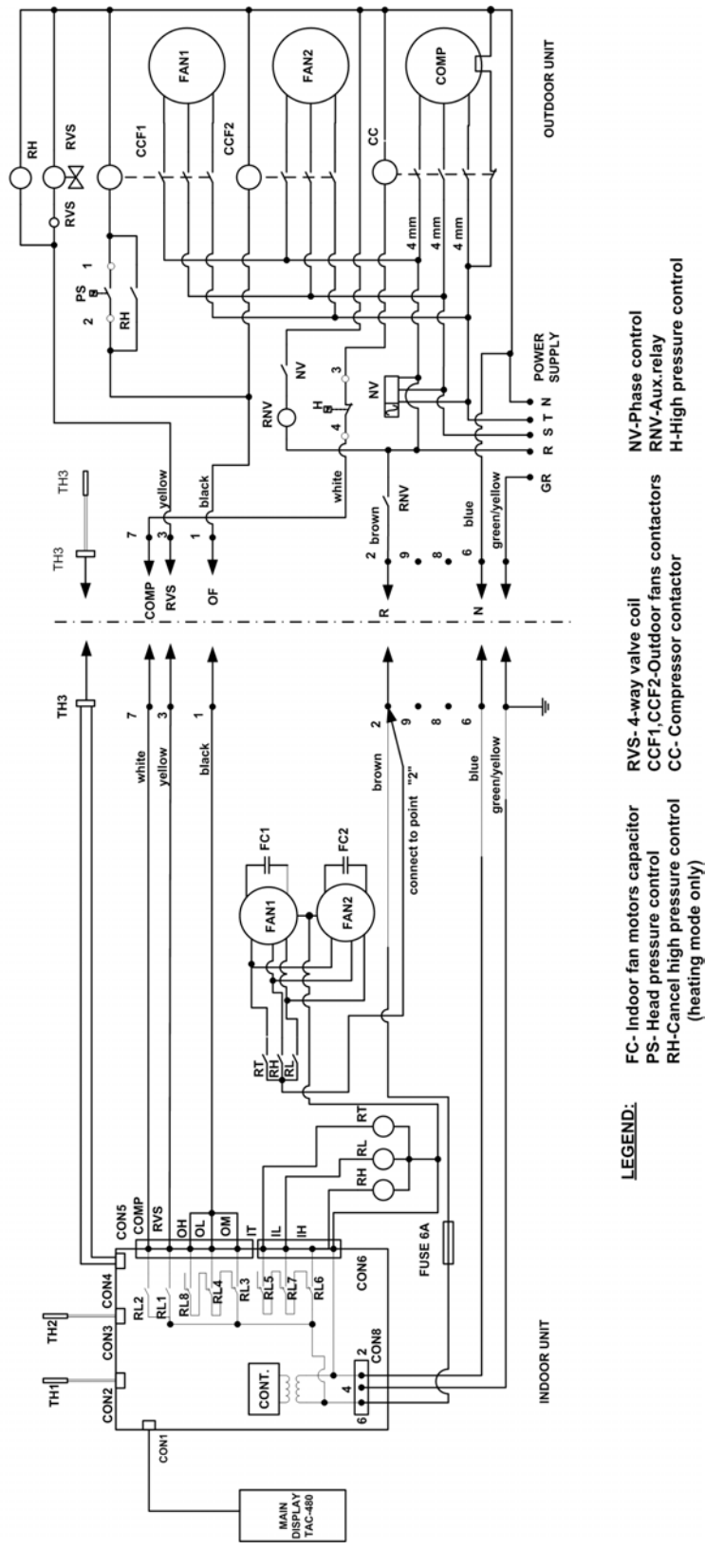
5.1 Electrical Wiring Diagram ANL-100

ELECTRICAL DIAGRAM ANL-100



5.2 Electrical Wiring Diagram AVL-100/AVL-120

ELECTRICAL DIAGRAM AVL-100/120



INSTALLATION INSTRUCTIONS

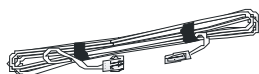
6.1 General

These instructions are intended as general guidelines. The instructions refer to ANL and AVL products. The air conditioner must be installed by trained and authorized personnel.

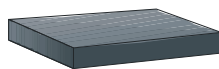
Use 7/8" and 1/2" copper tubing for connecting the outdoor and indoor units:

The installation must be performed in accordance with manufacturer's specifications using only approved tubing, original cables and original accessories.

6.2 Standard Accessories



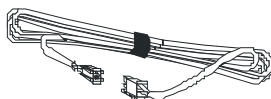
Outdoor sensor TH3
10 m. Connecting cable



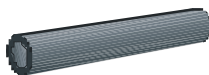
Absorbent cushions



User's manual



Display cable 8m.



Insulation for fittings



Wall mounted unit (RT)

Fig. 6-1

6.3 Electrical Requirements

- The air conditioner must be directly connected to an appropriate power supply.
- Use only type "G" or type "C" fuses as follows:
 - For ANL-100 and AVL-100 use 3X32A.
 - For AVL-120 use 3X40A.
- Use only a single length power cable, without extensions.
- For 3 Phase connections, use 8 wire inter-unit cables.

6.4 Typical ANL/AVL System Installation

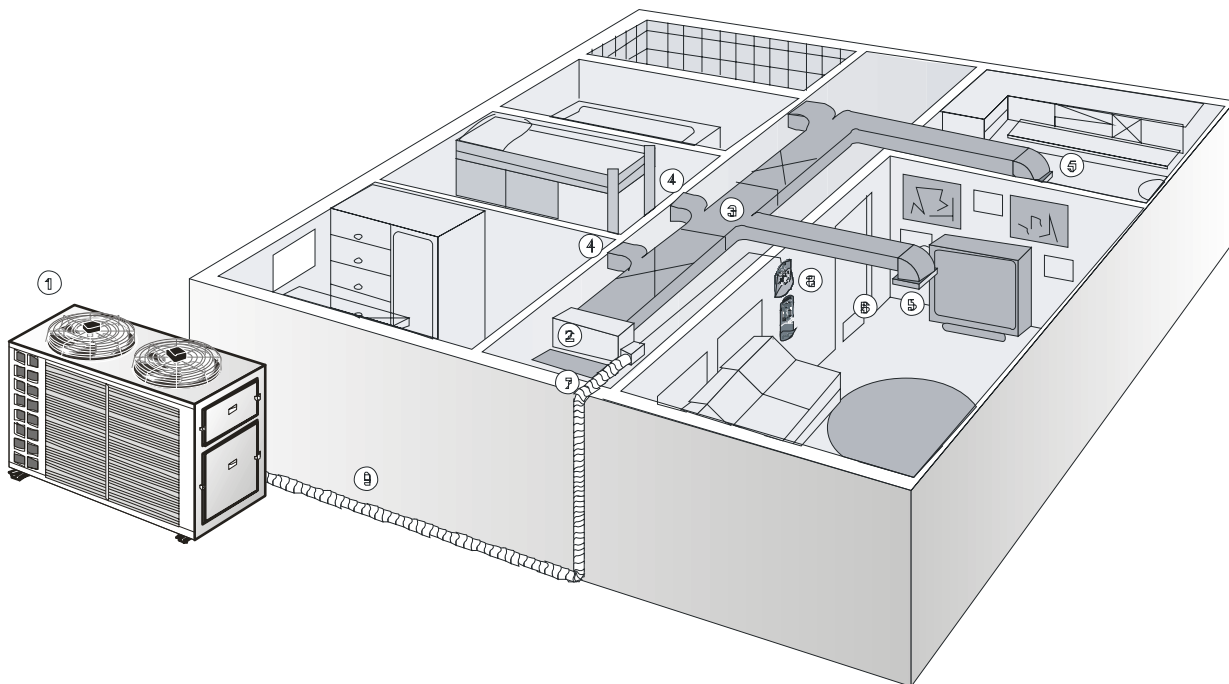


Fig. 6-2

- | | |
|------------------------------|----------------------------------|
| 1. Outdoor Unit (Condenser). | 6. Return Air Door Grill. |
| 2. Indoor Unit (Evaporator). | 7. Return Air Intake Grill. |
| 3. Duct System. | 8. Control Unit. |
| 4. Wall Air Diffusers. | 9. Inter-Unit Piping and Wiring. |
| 5. Ceiling Air Diffusers. | |

6.4.1 Indoor and Outdoor Unit Location

The indoor and outdoor units should be installed as close to each other as possible. Do not exceed the tubing length and height differences as shown in the accompanying table.

Model	Maximum Tubing Length	Maximum Height Difference Between Units
ANL-100	30 m	15 m
AVL-100	30 m	15 m
AVL-120	30 m	15 m

6.5 Installing the Outdoor Unit

- Make sure to leave sufficient space around the unit. See figure 6-3 for minimum required distance between the unit and nearby walls.
- Install the unit in a location with convenient access for service and maintenance purposes.
- Protect the unit from any heat source such as direct sun rays.
- Prevent from any dust or strong wind installation sites.
- Position the unit in such a way to minimize motor noise which reaches the user and neighbors.
- The unit must be installed at least 5 cm. above a solid surface.
- Make sure that the unit is level.
- Fasten the unit legs to the base. Place the rubber absorption cushions (supplied) under the unit's legs to prevent vibrations.
- For model ANL-100 hanging installation is allowed. Install only on special platform or concrete slab.
- A drainage tube can be connected to the outdoor unit to remove condensation formed during heating mode operation.

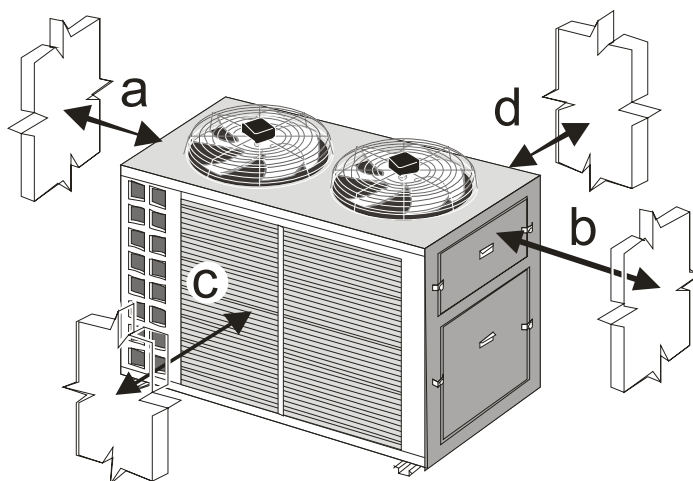


Fig. 6-3

Model	Distance			
	a mm	b mm	c mm	d mm
ANL-100	700	600	1000	200
AVL-100				
AVL-120				

6.6 Installing the Indoor Unit

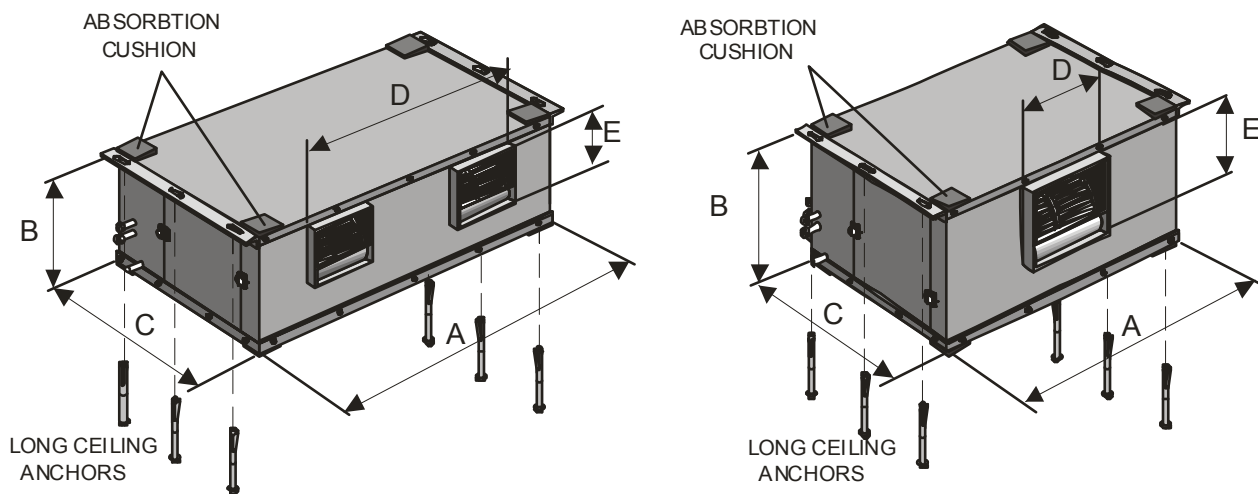


Fig. 6-4

Model	Dimensions				
	A mm	B mm	C mm	D mm	E mm
ANL-100	1300	580	800	400	345
AVL-100	1500	480	700	970	295
AVL-120	1600	550	800		

- Allow free access to the service door, air filter and control box.
- Carefully plan the drainage tube path at a minimum slope of 2% avoiding sharp bends or oil traps.
- The indoor unit may be installed either hanging from the ceiling or resting on hard surface (i.e. concrete).
- Whenever possible, lead the indoor unit drainage tube to the outdoor unit.

6.6.1 Installing the Indoor Unit on Hard Surface

- Stick four rubber absorption cushions on the four corners of the base, as shown in Fig. 6-4.
- Select the installation location according to the abovementioned factors and guidelines.

6.6.2 Installing the Indoor Unit Directly On the Ceiling

- Select the installation location according to the abovementioned factors and guidelines.
- Mark 4-6 holes on the ceiling, according to the unit's mounting bracket holes.
- If the ceiling is made of concrete, drill holes for the long ceiling anchors.
- Stick four rubber absorption cushions on the four corners of the base, as shown in Fig. 6-4.
- Attach the unit to the ceiling using the long anchor screws, as shown in Figure 6-4.

6.6.3 Drilling a Hole in the Wall for Drainage and Inter-Unit Connections

- To make the connections between the indoor and outdoor units, a 70 mm hole should be drilled for the refrigerant lines, drainage hose and electrical cable passage, through the wall, as shown in Figure 6-5.
- Make sure to drill outwards and downwards, so that the opening in the outside wall is at least 10 mm lower than the opening on the inside.
- Route the drainage hose at the bottom of the hole.
- Fill in the remaining wall hole gap with an appropriate sealant.

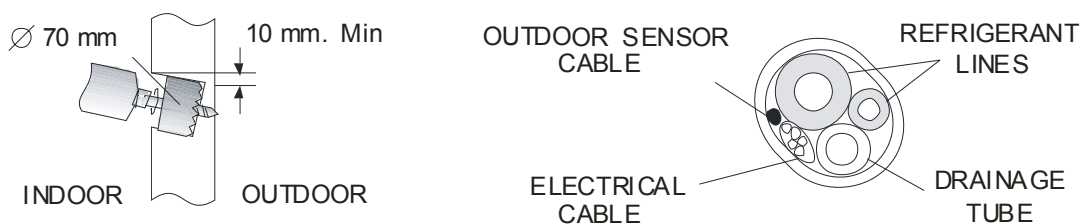


Fig. 6-5

6.7 Air Duct Installation

- The air ducts should be constructed of 0.7-0.8 mm galvanized metal sheet.
- To obtain optimal results, dust cross sections, connections, elbows and branches must be properly designed. We highly recommend to seek for expert advice on this matter.
- Air ducts should be properly insulated (preferably on the inside) with 50 mm thick fiberglass insulation having density of at least 24 Kg/m³.
- See Figure 6-6 for general guidelines.

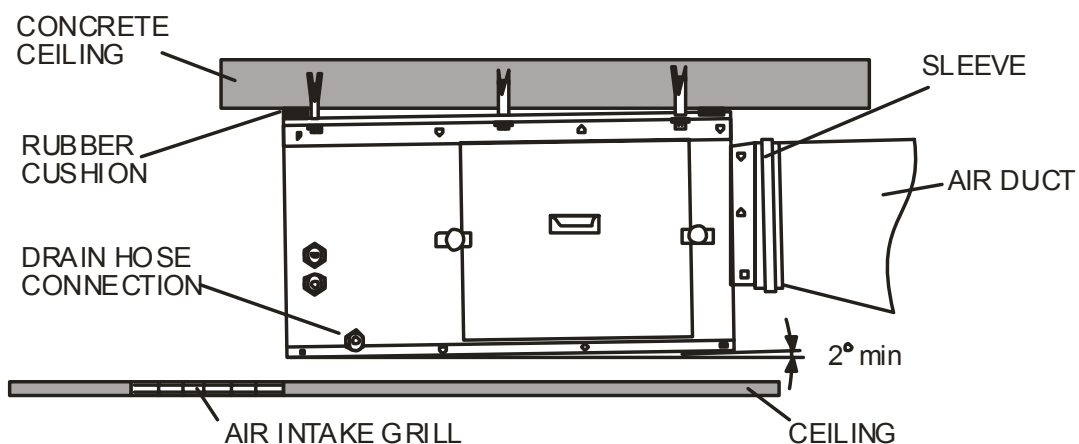


Fig. 6-6

6.8 Connecting the Refrigerant Lines and Refrigerant Charge

6.8.1 Connecting the Refrigerant Lines

- To connect the refrigerant lines use only "L" type sealed, dehydrated copper refrigerant tubing. No other type may be used. The use of other types of tubing will void the manufacturer's warranty.
- Do not open service valves and do not remove protecting caps from tubing ends until all the connections are made.
- Take care to avoid kinks or flattening of the tubing.
- Bend tubing with special bending tools to avoid the formation of sharp bends.
- Keep the tubing free of dirt, sand, moisture and other contaminants to avoid damaging the refrigerant system.

6.8.2 Flaring and Connecting

- Remove the protecting cap from the flare fitting.
- Remove the protecting cap from the tubing and cut to the required length. Make sure that the cut is perpendicular and clean, without burrs.
- Slip the flare nut on the tubing and flare the tube end, using standard flaring tools.
- Tighten the nut until resistance is met. Mark the nut and the fitting. Using a suitable wrench, tighten an additional 1/4 turn. Use the following specified torque, according to connection size.
- The valves on the outdoor unit must remain closed until all four connections have been made.

Valve Type	Tubing	Torque Kg m
Liquid Small	1/2"	5
Suction Large	7/8"	10

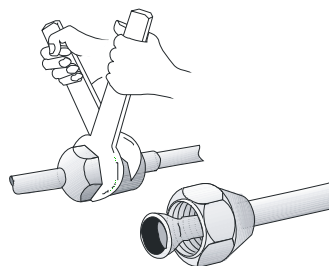


Fig. 6-7

6.8.3 Air Vacuum and Refrigerant Charge

When all the fittings are connected, air must be purged as follows:

- Open the service port cap on the suction line valve (large valve).
- Connect the vacuum pump to the service port via the pressure gauge and operate the pump for 30 minutes.
- Make sure that full vacuum is reached and disconnect the vacuum pump.
- Open the liquid line valve (small valve) with an Allen-Wrench for the purpose.
- Open the suction line valve (large valve) using an Allen-Wrench for the purpose.
- The outdoor unit is supplied with sufficient refrigerant for eight meters tubing. Add refrigerant and oil according to the table, for each meter of tubing used. If the tubing is shorter than eight meters, release gas from the system through the service valve into a recycling device.
- Close the service port caps on the suction line and the liquid valves.
- Make sure that the valves are properly opened. Be careful not to open them more than required, as this may damage the thread.
- Replace the stem cap. Oil the cap beam and hand tighten the cap, until resistance is met. Use a suitable wrench to tighten the cap by an additional 1/6 turn.
- Check the system for refrigerant leaks using a leak detector.

Tubing Line	Add refrigerant and oil if tubing exceeds 8 m. For each 1 m. tubing add:	
	Refrigerant gr.	Oil gr.
1/2"-7/8"	30	20

6.9 Installing the Wall Mounted Unit and the Remote Control

- Remove the two units illustrated in Figure 6-8 from their packaging.
- Attach each unit to the wall with two screws. Use the template attached to the packaging to assist in positioning the screws for the wall mounted unit.
- The two units must be positioned in the same room in such a way that there is an unimpeded line of sight between them.

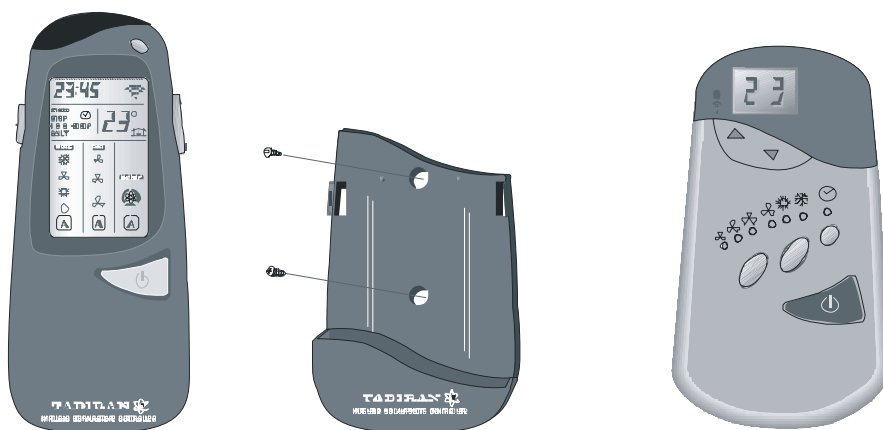


Fig. 6-8

6.10 Wiring the Indoor and Outdoor Units.

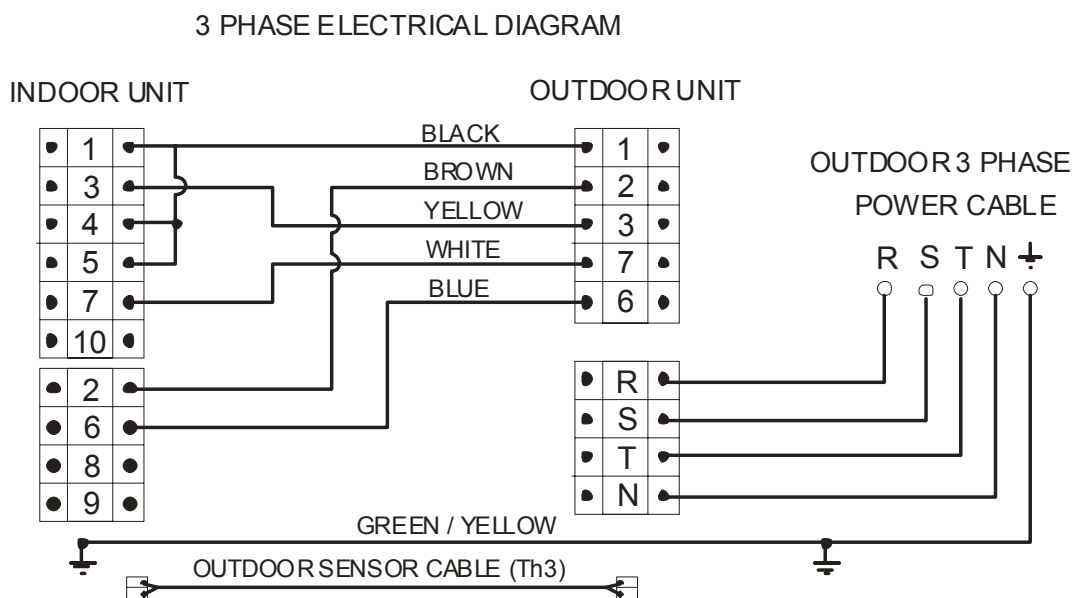


Fig. 6-9

6.10.1 Electrical Connections

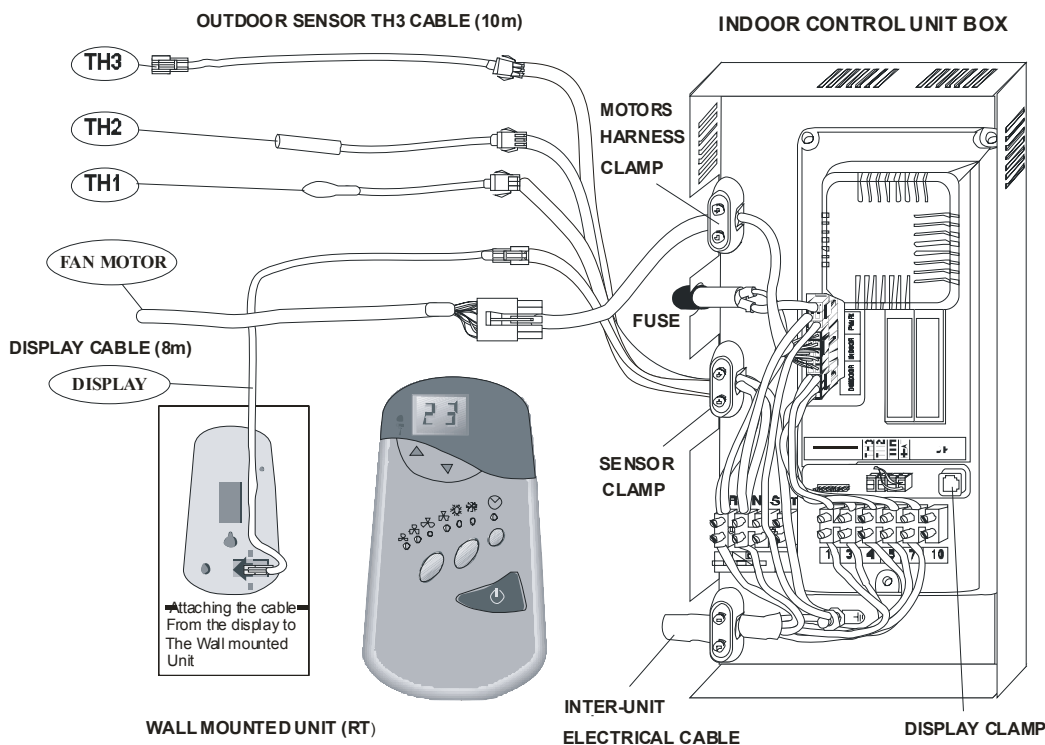


Fig. 6-10

Place the control box on the indoor unit service door, or up to 1.5 m. from the unit. The box should be conveniently located for access by service personnel. Protect both the control box and the electrical connections from water and high humidity.

- Remove the control box cover. Locate the connectors according to the drawing on the inside of the box cover.
- Connect the fan motor harness (10-pin connector) to the connector labeled "Indoor Fan" and secure the clamp.
- Route sensor TH1 to the air feedback area (near the air filter) and connect the outer end to its appropriate control box location.
- Connect sensor TH2 to its appropriate location.
- Place the wall mounted unit 1 up to 8 meters from the control box; choose a position from which it is possible to receive commands from anywhere in the room.
- Connect "DISPLAY" cable to the wall mounted unit and connect the other end to the appropriate place (labeled DP "DISPLAY") in the control box.
- Connect the inter-unit electrical cable to the terminal block 3, using a screw driver to insert the stripped wire end (8 mm.). Make sure that the wires are connected in accordance with the wiring diagram in Figure 6-9.
- Attach the inter-unit electrical cable with the cable clamp located on the control box.
- Attach the sensors cables TH1, TH2, TH3, Display cable and Electrical cable in place and secure the clamp.
- Close the control box.

6.10.2 Wiring the Outdoor Unit

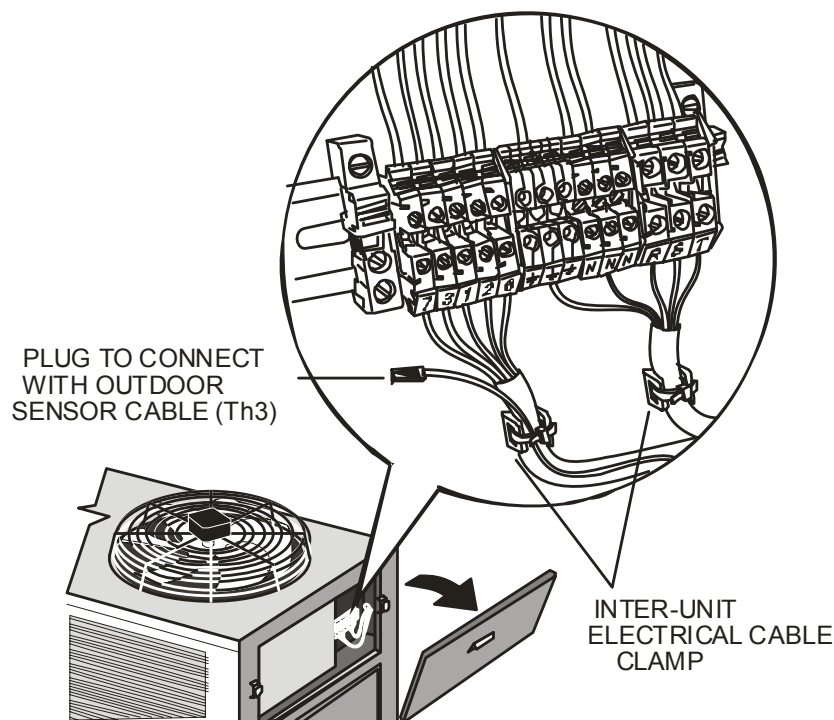


Fig. 6-11

- Remove the outdoor unit side cover.
- Connect the wires to the terminal block male-female, in accordance with the color coding, as shown in Figure 6-9.
- Connect the outdoor sensor cable, making sure the connector is properly inserted.
- Secure the inter-unit electrical cable to the outdoor unit using the clamp.
- Make sure that all screws and wires are properly fastened. Loose wires or connections can cause damage and present a fire hazard!
- Reassemble the side cover.

6.11 Finishing the Job

- Hide the tubing wherever possible.
- Make sure that the drainage tube slopes downstream along its entire length.
- Insulate tubing connections with the insulation materials supplied.
- Fasten tubes to the outside wall.
- Seal the hole through which the cables and tubing are passing.
- Connect the air conditioner to the power source and turn it on.
- Check all air conditioning operating modes. Consult the user manual.

6.11.1 Check List

Follow this check list:

- Do all the remote control buttons function properly?
- Do the I.R. receiver display panel lights work properly?
- Does the drainage work?
- Are there unusual noises or vibrations during operation?
- Is noise, drain water or air flow from the unit likely to disturb the neighbors?
- Are there any gas leakages?

6.11.2 Explaining the system

Explain the following items to the user, with the aid of the User Manual:

- How to turn the air conditioner on and off; selecting cooling, heating and other operating modes; setting a desired temperature; setting the timer to automatically start and stop air conditioner operation; and the other features of the remote controller and display panel.
- How to remove the air filter and adjust the air deflectors.
- Present the User Manual and this installation sheet to the customer.

7. TROUBLESHOOTING GUIDE

7.1 General Troubleshooting.

Note: Check for broken wires and loose cable lugs first!

Warning: Always unplug the A/C before performing cleaning or maintenance activities.

	Symptom	Probable Cause	Corrective Action
1	A/C fails to start.	<ol style="list-style-type: none">1. Power supply to unit not connected (POWER LED Off).2. Fuse Blown (POWER LED Off).3. ON/SEND has not been pressed.4. A/C does not receive transmitted commands.5. Electric supply wall socket is defective.6. AUTO-OFF-REMOTE switch is set to Off.	<ol style="list-style-type: none">1. Check for proper connection of power plugs in wall socket. Check red LED on RST Controller: If LED is OFF – change RST wires. If LED is ON – check Phase voltage.2. Reset automatic circuit breaker or replace line fuse.3. Press ON/SEND button on R/C, or use the AUTO 3-position slide switch for automatic constant 22°C Set Point (when R/C is not available).4. Make sure that nothing blocking the R/C transmission to the A/C display.5. Repair or replace wall socket.6. Slide the 3-position switch on the display to REMOTE (RMOT) position.
2	Only indoor fan ventilator works although cooling or heating is desired.	<ol style="list-style-type: none">1. The selected mode is on Fan Only, or on Cool when heating is desired.2. Temperature is set to a value which is too high (in Cool mode).3. Faulty outdoor fan motor or other fault that cause compressor overload protection to cutout.	<ol style="list-style-type: none">1. Check if the R/C is on the desired mode. If not, select the correct mode (refer to your User Manual). Also note that each 15 min. (max), the compressor will be switch on for 3 min. (at least).2. Observe the temperature setting on the R/C. Also note that each 15 min. (max), the compressor will be switch on for 3 min. (at least).3. See step 3 and/or step 4.
3	Only indoor fan motor and compressor working. Outdoor fan motor stopped.	<ol style="list-style-type: none">1. In Heat mode: Indoor fan motor blocked.2. In Cool mode: system runs while evaporator Anti-Ice routine takes place.	<ol style="list-style-type: none">1. Remove obstruction.2. Wait up to 90 seconds until Anti-Ice routine is completed.

General Troubleshooting (continued).

	Symptom	Probable Cause	Corrective Action
4	In Cool mode: high pressure, or; In Heat mode: outdoor coil freeze.	1. Run capacitor of outdoor fan motor is burnt. 2. Winding of outdoor fan motor is shorted.	1. Replace outdoor fan motor run capacitor. 2. Replace outdoor fan motor.
5	Only indoor fan motor and outdoor fan motor are working. No cooling and/or heating take place.	1. Overload safety device on compressor is cut out due to high temperature. 2. Compressor run capacitor is burnt. 3. Compressor winding shorted. 4. Pressure is too high.	1. Switch Off power and try again after one hour. 2. Replace compressor run capacitor. 3. Replace compressor. 4. Check HP controller. Press RESET button.
6	No air supply at indoor unit (compressor operates).	1. Indoor fan motor is blocked or turns slowly. 2. Indoor fan motor capacitor is burnt. 3. Indoor fan motor winding is burnt. 4. In Heat mode: delayed start for indoor fan motor. 5. Clogged air filters.	1. Check voltage. Repair wiring if necessary. 2. Check indoor fan wheel if tight on motor shaft. Tighten if necessary. 3. Replace indoor fan motor capacitor. 4. Replace indoor fan motor. 5. Normal software delay (max. 20 sec.). Clean filters.
7	Low Capacity.	1. Lack of refrigerant (will be accompanied by whistling noise); causes ice formation on the evaporator coil (in Cool mode). 2. Clogged air filters.	1. Unit must be charged (according to the nameplate) after localizing the gas leak. 2. Clean filters.
8	In Heat mode: only compressor runs, outdoor and indoor fan motors are stopped. AIR CON indicator flashes.	A/C operates in De-Icing cycle.	Wait (max.) 10 min. until the A/C resumes to normal operation.

General Troubleshooting (continued).

	Symptom	Probable Cause	Corrective Action
9	Water accumulates and overflows from evaporator drain pan.	Drain pan pipe or hose is clogged or the spout of drain pan is clogged.	Disassemble plastic drain-pipe from spout of evaporator drain pan. Flush with clean water.
10	Water dripping from the condenser base (in Heat mode).	Water drain outlet or the spout is clogged.	Open condenser cover, clean out water outlet, and clean the base inside thoroughly.
11	R/C fail to active the prescribed functions. .	1. The 3-position slide switch on the A/C display is in AUTO or OFF position. 2. Faulty R/C settings. 3. R/C low battery. 4. IR detector.	1. Change the slider position to REMOTE (RMOT). 2. A. If R/C symbols respond to the commands correctly, check the A/C ID Code (Standard or Alternative). Refer to "Changing A/C ID Code" and to R/C DIP switch 3 setting. B. If Cool commands are OK, but Heat symbol is skipped on LCD, refer to R/C DIP switch 7 setting. C. Replace R/C. 3. Replace R/C batteries. 4. Try shorter distance between R/C and A/C. If no respond, replace IR detector
12	The A/C is interfered by other R/C or our R/C interfering other instruments.	Common IR Code.	Modify the R/C IR transmission code. Refer to "Changing A/C ID Code" and to R/C DIP switch 3 setting at this manual.
13	In Cool mode: The unit (compressor) does not start.	1. Faulty TH-3 (outdoor) sensor. 2. Faulty TH-3 Extension Cable (between indoor and outdoor).	1. Replace TH-3 sensor. 2. Replace TH-3 Extension Cable.
14	Indoor fan is not running at all.	1. Failure in motor capacitor. 2. No voltage out of P.C.B. assembly for fan motor. 3. Motor winding failure (check resistance).	1. Replace the capacitor. 2. Replace the P.C.B. assembly. 3. Replace the fan motor.

General Troubleshooting (continued).

	Symptom	Probable Cause	Corrective Action
15	Outdoor fan is not running at all.	<ol style="list-style-type: none">1. Power supply failure..2. Fan motor relays failure.3. Fan contactor failure.4. Motor winding failure (check resistance).	<ol style="list-style-type: none">1. Check power supply.2. Replace faulty relays.3. Replace faulty contactor.4. Replace the fan motor.
16	Compressor motor is not running at all	<ol style="list-style-type: none">1. Failure in compressor motor magnetic contactor.2. Failure in KP-5.3. Compressor motor winding failure (check resistance).	<ol style="list-style-type: none">1. Replace faulty contactor.2. Reset KP-5.3. Replace the compressor.

7.2 Poor Cooling Troubleshooting.

	Symptom	Probable Cause	Corrective Action
1	Refrigerant flow failure	5. Refrigerant gas shortage. 6. Excessive overcharging of refrigerant. 7. Gas leakage. 8. Clogging of strainer or capillary tube. 9. 4-Way valve is defective. 10. Solenoid 4-Way valve is defective. 11. Compressor is defective. 12. Service valves are not fully open.	5. Charge refrigerant gas. 6. Recharge gas. 7. Repair leakage. 8. Replace strainer. 9. Replace 4-Way valve. 10. Replace solenoid. 11. Replace compressor. 12. Open the valves full.
2	Air circulation failure.	Air filter is clogged.	Clean air filter.
3	Installation failure.	1. Location of the indoor or the outdoor units is not according to the instructions. 2. Refrigerant tubes between the units are not installed according to the instructions.	1. Relocate units. 2. Relocate or replace tubes.

7.3 Poor Heating Troubleshooting.

	Symptom	Probable Cause	Corrective Action
1	Refrigerant flow failure	<ol style="list-style-type: none">1. Refrigerant gas shortage.2. Excessive overcharging of refrigerant.3. Gas leakage.4. Clogging of strainer or capillary tube.5. 4-Way valve is defective.6. Solenoid 4-Way valve is defective.7. Compressor is defective.8. Service valves are not fully open.	<ol style="list-style-type: none">1. Charge refrigerant gas.2. Recharge gas.3. Repair leakage.4. Replace strainer.5. Replace 4-Way valve.6. Replace solenoid.7. Replace compressor.8. Open the valves full.
2	Air circulation failure.	Air filter is clogged.	Clean air filter.
3	Installation failure.	<ol style="list-style-type: none">1. Location of the indoor or the outdoor units is not according to the instructions.2. Refrigerant tubes between the units are not installed according to the instructions.	<ol style="list-style-type: none">1. Relocate units.2. Relocate or replace tubes.
4	Defrost failure.	TH3 Thermistor is defective.	Replace TH3 Thermistor.

7.4 Indicator lamps troubleshooting.

	Lamps Status	Indication	Corrective Action
1	POWER flashes 10 seconds after A/C startup (with or without other signal lamps).	Communication problem.	Check connection between indoor and outdoor units.
2	POWER, COMPRES. and PRESSURE lamps flash.	TH-1 failure.	Check TH-1 for correct resistance. Check for proper connection between TH-1 and indoor unit. Replace TH-1 if necessary.
3	POWER, COMPRES. and IMPEDANCE lamps flash.	TH-2 failure.	Check TH-2 for correct resistance. Check for proper connection between TH-2 and indoor unit. Replace TH-2 if necessary.
4	POWER lamp flashes and PRESSURE is lit, AIR CON is OFF.	Low Pressure.	Check if the filters are clean. Check TH-1 & TH-2 for correct resistance. Check cooling system for normal operation.
5	POWER and PRESSURE lamps flash, AIR CON is OFF.	High Pressure.	In Heat mode: Check if the evaporator is blocked (check if filters are clean). Check TH-2 (in Heating mode) or TH-3 (in Cool mode) for correct resistance. Check cooling system for normal operation.
6	FILTER is lit	Filter cleaning.	Clean all filters.
7	POWER & IMPEDANCE lamps flash, COMPRES. Is lit.	Low voltage.	Check power supply voltage. Check electrical connections. Replace TAC-444.
8	POWER lamp flashes, IMPEDANCE & COMPRES. lamps lit. AIR CON lamp flashes after A/C startup.	Voltage failure at startup.	Check power supply voltage. Check electrical connections. Replace TAC-444.

Indicator lamps troubleshooting (continued).

	Lamps Status	Indication	Corrective Action
9	POWER lamp flashes, IMPEDANCE & COMPRES. are lit before A/C startup.	High voltage.	Check power supply voltage. Check electrical connections. Replace TAC-444.
10	POWER lamp flashes, IMPEDANCE & COMPRES are lit. AIR CON is lit after A/C startup.	High Voltage during compressor operation.	Check power supply voltage. Check electrical connections. Replace TAC-444.
11	POWER, COMPRES. and IMPEDANCE lamps flash.	TH-2 failure.	Check TH-2 for correct resistance. Check for proper connection between TH-2 and indoor unit. Replace TH-2 if necessary.
12	POWER & AIR CON lamps lit, COMPRES lamp flashes.	Normal Operation	This is normal operation when the A/C enters the thermostat stop, and the 'minimal halt period' (5 min.) is passed. This indication will continue until the first thermostat demand or the 'maximal halt period' (15 min.) will elapse.